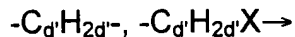


**IN THE CLAIMS:**

1-33 (Canceled)

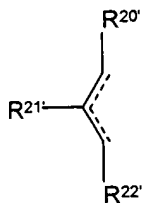
34. (Currently Amended) The reactant composition of claim ~~33~~ 80 wherein M is selected from the group consisting of nickel, palladium, and platinum.

35. (Currently Amended) The reactant composition of claim ~~33~~ 80 wherein R' is selected from the group consisting of hydrogen; linear and branched C<sub>1</sub>-C<sub>20</sub> alkyl; linear and branched C<sub>2</sub>-C<sub>20</sub> alkenyl; allylic ligands and canonical forms thereof; substituted and unsubstituted C<sub>5</sub>-C<sub>10</sub> cycloalkyl; substituted and unsubstituted C<sub>6</sub>-C<sub>15</sub> cycloalkenyl; substituted and unsubstituted C<sub>7</sub>-C<sub>30</sub> aralkyl; substituted and unsubstituted, C<sub>6</sub>-C<sub>30</sub> aryl; C<sub>6</sub>-C<sub>30</sub> heteroatom containing aryl; wherein said heteroatom is selected from the group consisting of sulfur, oxygen, nitrogen, phosphorus, wherein the substituents in said substituted radicals are selected from the group consisting of linear or branched C<sub>1</sub>-C<sub>5</sub> alkyl, linear or branched C<sub>1</sub>-C<sub>5</sub> haloalkyl, linear or branched C<sub>2</sub>-C<sub>5</sub> alkenyl, haloalkenyl, halogen, and phenyl optionally substituted with linear or branched C<sub>1</sub>-C<sub>5</sub> alkyl, linear or branched C<sub>1</sub>-C<sub>5</sub> haloalkyl, and halogen; and a hydrocarbyl containing ligand selected from the formulae:



each of said ligands together with the Group 10 metal form a metallacycle or heteroatom containing metallacycle, wherein d' represents an integer from 3 to 10, and X→ represents an alkenyl or heteroatom containing moiety that coordinates to the Group 10 metal center.

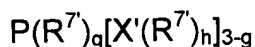
36. (Original) The reactant composition of claim 35 wherein said allylic ligand is represented by the formula:



wherein  $R^{20'}$ ,  $R^{21'}$ , and  $R^{22'}$  each independently represent hydrogen, halogen, linear and branched  $C_1$ - $C_5$  alkyl,  $C_5$ - $C_{10}$  cycloalkyl, linear and branched  $C_1$ - $C_5$  alkenyl,  $C_6$ - $C_{30}$  aryl, and  $C_7$ - $C_{30}$  aralkyl, each of the foregoing radicals optionally substituted with a substituent selected from linear and branched  $C_1$ - $C_5$  alkyl, linear and branched  $C_1$ - $C_5$  haloalkyl, halogen, and phenyl which can optionally be substituted with linear and branched  $C_1$ - $C_5$  alkyl, linear and branched  $C_1$ - $C_5$  haloalkyl, and halogen; any two of  $R^{20'}$ ,  $R^{21'}$ , and  $R^{22'}$  can be linked together with the carbon atoms to which they are attached to form a cyclic or multi-cyclic ring, each optionally substituted with linear or branched  $C_1$ - $C_5$  alkyl, linear or branched  $C_1$ - $C_5$  haloalkyl, and halogen.

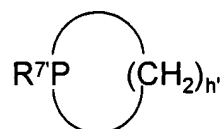
37. (Currently Amended) The reactant composition of claim ~~33~~ 80 wherein said group 15 electron donor ligand is selected from the group consisting of amines, pyridines, arsines, stibines and organophosphorus containing compounds.

38. (Original) The reactant composition of claim 37 wherein said organophosphorus containing ligand is selected from a compound of the formula:



wherein  $X'$  is oxygen, sulfur, nitrogen, or silicon;  $g$  is 0, 1, 2, or 3;  $h$  is 1, 2, or 3, with the proviso that when  $X'$  is a silicon atom,  $h$  is 3, when  $X'$  is an oxygen or sulfur atom  $h$  is 1, and when  $X'$  is a nitrogen atom,  $h$  is 2;  $R^{7'}$  is independently selected from hydrogen, linear and branched  $C_1$ - $C_{10}$  alkyl,  $C_5$ - $C_{10}$  cycloalkyl, linear and branched  $C_1$ - $C_{10}$  alkoxy, allyl, linear and branched  $C_2$ - $C_{10}$  alkenyl,  $C_6$ - $C_{12}$  aryl,  $C_6$ - $C_{12}$  aryloxy,  $C_6$ - $C_{12}$  arylsulfides,

C<sub>7</sub>-C<sub>18</sub> aralkyl, cyclic ethers and thioethers, tri(linear and branched C<sub>1</sub>-C<sub>10</sub> alkyl)silyl, tri(C<sub>6</sub>-C<sub>12</sub> aryl)silyl, tri(linear and branched C<sub>1</sub>-C<sub>10</sub> alkoxy)silyl, triaryloxysilyl, tri(linear and branched C<sub>1</sub>-C<sub>10</sub> alkyl)siloxy, and tri(C<sub>6</sub>-C<sub>12</sub> aryl)siloxy, wherein each of the foregoing substituents can be optionally substituted with linear or branched C<sub>1</sub>-C<sub>5</sub> alkyl, linear or branched C<sub>1</sub>-C<sub>5</sub> haloalkyl, C<sub>1</sub>-C<sub>5</sub> alkoxy, halogen, and combinations thereof; when g is 0 and X' is oxygen, any two or 3 of R<sup>7'</sup> can be taken together with the oxygen atoms to which they are attached to form a cyclic moiety; when g is 3 any two of R<sup>7'</sup> can be taken together with the phosphorus atom to which they are attached to represent a phosphacycle of the formula:



wherein R<sup>7'</sup> is as previously defined and h' is an integer from 4 to 11.

39. (Original) The reactant composition of claim 38 wherein g is 3 and R<sup>7'</sup> is independently selected from the group consisting of hydrogen, linear and branched C<sub>1</sub>-C<sub>10</sub> alkyl, C<sub>5</sub>-C<sub>10</sub> cycloalkyl, linear and branched C<sub>1</sub>-C<sub>10</sub> alkoxy, allyl, linear and branched C<sub>2</sub>-C<sub>10</sub> alkenyl, C<sub>6</sub>-C<sub>12</sub> aryl, and C<sub>6</sub>-C<sub>12</sub> aryloxy.

40. (Original) The reactant composition of claim 37 wherein said organophosphorus containing ligand is a phosphine selected from the group consisting of trimethylphosphine, triethylphosphine, tri-n-propylphosphine, triisopropylphosphine, tri-n-butylphosphine, tri-sec-butylphosphine, tri-i-butylphosphine, tri-t-butylphosphine, tricyclopentylphosphine, triallylphosphine, tricyclohexylphosphine, triphenylphosphine, trinaphthylphosphine, tri-p-tolylphosphine, tri-o-tolylphosphine, tri-m-tolylphosphine, tribenzylphosphine, tri(p-trifluoromethylphenyl)phosphine, tris(trifluoromethyl)phosphine, tri(p-fluoro-phenyl)phosphine, tri(p-trifluoromethylphenyl)phosphine, allyldiphenylphosphine, benzyldiphenylphosphine, bis(2-furyl)phosphine, bis(4-methoxyphenyl)-phenylphosphine, bis(4-methylphenyl)phosphine, bis(3,5-bis(trifluoromethyl)-phenyl)phosphine, t-butylbis(trimethylsilyl)phosphine, t-butyl-diphenyl

phosphine, cyclohexyldiphenylphosphine, diallylphenylphosphine, dibenzylphosphine, dibutylphenylphosphine, dibutylphosphine, di-*t*-butylphosphine, dicyclohexyl-phosphine, diethylphenylphosphine, di-*i*-butylphosphine, dimethylphenylphosphine, dimethyl(trimethylsilyl)phosphine, diphenylphosphine, diphenylpropylphosphine, diphenyl(*p*-tolyl)phosphine, diphenyl(trimethylsilyl)phosphine, diphenylvinyl-phosphine, divinylphenyl phosphine, ethyldiphenylphosphine, (2-methoxyphenyl) methylphenylphosphine, tri-*n*-octylphosphine, tris(3,5-bis(trifluoromethyl)phenyl) phosphine, tris(3-chlorophenyl) phosphine, tris(4-chloro-phenyl)phosphine, tris(2,6-dimethoxyphenyl)phosphine, tris(3-fluorophenyl)phosphine, tris(2-furyl)] phosphine, tris(2-methoxyphenyl)phosphine, tris(3-methoxyphenyl)phosphine, tris(4-methoxyphenyl)phosphine, tris(3-methoxypropyl) phosphine, tris(2-thienyl)-phosphine, tris(2,4,6-trimethylphenyl)phosphine, tris(trimethylsilyl)phosphine, isopropyldiphenylphosphine, dicyclohexylphenylphosphine, (+)-neomenthyldiphenyl phosphine, tribenzylphosphine, diphenyl-(2-methoxy-phenyl)phosphine, diphenyl (pentafluorophenyl)phosphine, bis(pentafluorophenyl)-phenylphosphine, and tris(pentafluorophenyl)phosphine.

41. (Previously Presented) The reactant composition of claim 79 wherein said labile neutral electron donor ligand is selected from the group consisting of DMF, DMSO, cyclooctadiene, water, chlorinated alkanes, alcohols, ethers, ketones, nitriles, arenes, phosphine oxides, organic carbonates and esters.

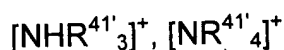
42. (Currently Amended) The reactant composition of claim ~~33~~ 80 wherein said anionic leaving group is selected from the group consisting of halogen, nitrate, triflate, triflimide trifluoroacetate, tosylate,  $\text{AlBr}_4^-$ ,  $\text{AlF}_4^-$ ,  $\text{AlCl}_4^-$ ,  $\text{AlF}_3\text{O}_3\text{SCF}_3^-$ ,  $\text{AsCl}_6^-$ ,  $\text{SbCl}_6^-$ ,  $\text{SbF}_6^-$ ,  $\text{PF}_6^-$ ,  $\text{BF}_4^-$ ,  $\text{ClO}_4^-$ ,  $\text{HSO}_4^-$ , carboxylates, acetates, acetylacetonates, carbonates, aluminates, borates, hydrocarbonyl and halogenated hydrocarbonyl selected from hydride, linear and branched  $\text{C}_1\text{-C}_5$  alkyl, linear and branched  $\text{C}_1\text{-C}_5$  haloalkyl,  $\text{C}_5\text{-C}_{10}$  cycloalkyl,  $\text{C}_5\text{-C}_{10}$  cyclohaloalkyl,  $\text{C}_6\text{-C}_{10}$  aryl, and  $\text{C}_6\text{-C}_{10}$  haloaryl, wherein said cyclohaloalkyl and haloaryl groups are monosubstituted or multisubstituted with a halogen group selected from bromine, chlorine, fluorine, and iodine.

43. (Currently Amended) The reactant composition of claim ~~33~~ 80 wherein said procatalyst is a compound selected from ~~a compound of the~~ group consisting of bis(triisopropylphosphine)(hydrido)palladium chloride, bis(triisopropylphosphine)(hydrido)palladium nitrate, bis(triisopropylphosphine)-(hydrido)palladium triflate, (allyl)palladium(triisopropylphosphine) chloride, (methallyl) palladium(triisopropylphosphine) chloride, (crotyl)palladium(triisopropylphosphine) chloride, (allyl) palladium(triisopropylphosphine) trifluoroacetate, (1,1-dimethyl- $\pi$ -allyl-(triisopropylphosphine)palladium trifluoroacetate, (2-chloroallyl)palladium-(triisopropylphosphine) trifluoroacetate, (allyl)palladium(triisopropylphosphine) triflate, (crotyl)palladium (triisopropyl-phosphine) triflate, (methallyl)palladium (triisopropylphosphine) triflate, (allyl)palladium-(triisopropylphosphine) triflimide, (methallyl)palladium (triisopropylphosphine) triflimide, bis(tricyclohexyl-phosphine)(hydrido)palladium chloride, bis(tricyclohexylphosphine) (hydrido) palladium nitrate, bis(tricyclohexylphosphine)(hydrido)palladium trifluoroacetate, bis(tricyclohexyl phosphine)(hydrido)palladium formate, (allyl)palladium(tricyclohexyl-phosphine) chloride, (methallyl)palladium(tricyclohexylphosphine) chloride, (allyl)palladium-(tricyclohexylphosphine) trifluoroacetate, (allyl)palladium-(tricyclohexylphosphine) triflate, (methallyl)palladium(tricyclohexylphosphine) triflate, (crotyl)palladium (tricyclohexylphosphine) triflate, (methallyl)palladium (tricyclohexylphosphine) triflimide, (allyl)palladium-(tricyclohexylphosphine) *p*-tolylsulfonate, (allyl)palladium (tricyclohexylphosphine) triflimide, (allyl)palladium (tricyclopentylphosphine)chloride, (methallyl)palladium(tricyclopentyl-phosphine) chloride, (allyl)palladium(tricyclopentylphosphine) triflate, (crotyl)palladium-(tricyclopentylphosphine) triflate, (methallyl)palladium(tricyclopentylphosphine) triflate, (allyl)palladium(tricyclopentylphosphine) triflimide, (methallyl)palladium (tricyclopentyl-phosphine)triflimide, (allyl)palladium(triisopropylphosphine)C<sub>6</sub>F<sub>5</sub>, (allyl)palladium(tricycle-hexylphosphine) C<sub>6</sub>F<sub>5</sub>, and [(allyl)palladium(HOCH<sub>3</sub>) (triisopropylphosphine)][B(O<sub>2</sub>-3,4,5,6-Cl<sub>4</sub>C<sub>6</sub>)<sub>2</sub>].

44 (Canceled)

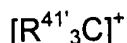
45. (Previously Presented) The composition of claim 79 wherein said alkali metal cation is selected from the group consisting of lithium, sodium, and potassium; said alkaline earth metal cation is selected from the group consisting of beryllium, magnesium, calcium, strontium, and barium; said transition metal cation is selected from the group consisting of zinc, silver, and thallium; and said organic group cation is selected from ammonium, phosphonium, carbonium and silylium cations.

46. (Original) The reactant composition of claim 45 wherein said ammonium cation is selected from a compound of the formulae:



wherein  $\text{R}^{41'}$  independently represents a hydrocarbyl, silylhydrocarbyl, or perfluorocarbyl group, each containing 1 to 24 carbon atoms.

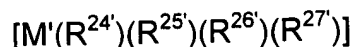
47. (Original) The reactant composition of claim 45 wherein said carbonium cation is selected from a compound of the formula:



wherein  $\text{R}^{41'}$  independently represents a hydrocarbyl, silylhydrocarbyl, or perfluorocarbyl group, each containing 1 to 24 carbon atoms.

48. (Previously Presented) The reactant composition of claim 79 wherein said weakly coordinating counteranion is selected from the group consisting of borates, aluminates, boratobenzene anions, carborane anions, and halocarborane anions.

49. (Original) The reactant composition of claim 48 wherein the weakly coordinating anion is a borate or aluminate of the formula:



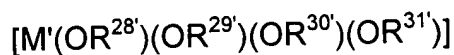
wherein M' is boron or aluminum and R<sup>24'</sup>, R<sup>25'</sup>, R<sup>26'</sup>, and R<sup>27'</sup> independently represent fluorine, linear and branched C<sub>1</sub>-C<sub>10</sub> alkyl, linear and branched C<sub>1</sub>-C<sub>10</sub> alkoxy, linear and branched C<sub>3</sub>-C<sub>5</sub> haloalkenyl, linear and branched C<sub>3</sub>-C<sub>12</sub> trialkylsiloxo, C<sub>18</sub>-C<sub>36</sub> triarylsiloxo, substituted and unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl, and substituted and unsubstituted C<sub>6</sub>-C<sub>30</sub> aryloxy groups, wherein R<sup>24'</sup> to R<sup>27'</sup> can not simultaneously represent alkoxy or simultaneously represent aryloxy, and wherein said aryl and aryloxy groups when substituted are monosubstituted or multisubstituted and said substituents are independently selected from linear and branched C<sub>1</sub>-C<sub>5</sub> alkyl, linear and branched C<sub>1</sub>-C<sub>5</sub> haloalkyl, linear and branched C<sub>1</sub>-C<sub>5</sub> alkoxy, linear and branched C<sub>1</sub>-C<sub>5</sub> haloalkoxy, linear and branched C<sub>1</sub>-C<sub>12</sub> trialkylsilyl, C<sub>6</sub>-C<sub>18</sub> triarylsilyl, and halogen selected from chlorine, bromine, and fluorine.

50. (Original) The reactant composition of claim 49 wherein said borate is selected from the group consisting of tetrakis(pentafluorophenyl)borate, tetrakis(3,5-bis(tri-fluoromethyl)phenyl)borate, tetrakis(2-fluorophenyl)borate, tetrakis(3-fluorophenyl)borate, tetrakis(4-fluorophenyl)borate, tetrakis(3,5-difluorophenyl)borate, tetrakis(2,3,4,5-tetra-fluorophenyl)borate, tetrakis (3,4,5,6-tetrafluorophenyl)borate, tetrakis(3,4,5-trifluorophenyl) borate, methyltris (perfluorophenyl)borate, ethyltris(perfluorophenyl)borate, phenyltris(perfluoro-phenyl)borate, tetrakis(1,2,2-trifluoroethylenyl)borate, tetrakis(4-tri-*i*-propylsilyl-tetrafluorophenyl)borate, tetrakis(4-dimethyl-*tert*-butylsilyl)tetrafluorophenyl)borate, (triphenylsiloxo)tris-(pentafluorophenyl)borate, (octyloxy)tris(pentafluorophenyl)borate, tetrakis[3,5-bis[1-methoxy-2,2,2-trifluoro-1-(trifluoromethyl)ethyl]phenyl]borate, tetrakis[3-[1-methoxy-2,2,2-trifluoro-1-(trifluoromethyl)ethyl]-5-(trifluoromethyl)phenyl]borate, and tetrakis[3-[2,2,2-trifluoro-1-(2,2,2-trifluoroethoxy)-1-(trifluoromethyl)ethyl]-5-(trifluoromethyl)phenyl]borate.

51. (Original) The reactant composition of claim 49 wherein said aluminate is selected from the group consisting of tetrakis(pentafluorophenyl)aluminate, tris(nonafluoro-biphenyl)fluoroaluminate, (octyloxy)tris(pentafluorophenyl)aluminate,

tetrakis(3,5-bis(trifluoro-methyl)phenyl)aluminate, and methyltris(pentafluorophenyl)aluminate.

52. (Original) The reactant composition of claim 48 wherein the weakly coordinating anion is a borate or aluminate of the formula:



M' is boron or aluminum, R<sup>28'</sup>, R<sup>29'</sup>, R<sup>30'</sup>, and R<sup>31'</sup> independently represent linear and branched C<sub>1</sub>-C<sub>10</sub> alkyl, linear and branched C<sub>1</sub>-C<sub>10</sub> haloalkyl, C<sub>2</sub>-C<sub>10</sub> haloalkenyl, substituted and unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl, and substituted and unsubstituted C<sub>7</sub>-C<sub>30</sub> aralkyl groups, subject to the proviso that at least three of R<sup>28'</sup> to R<sup>31'</sup> must contain a halogen containing substituent; OR<sup>28'</sup> and OR<sup>29'</sup> can be taken together to form a chelating substituent represented by -O-R<sup>32'</sup>-O-, wherein the oxygen atoms are bonded to M' and R<sup>32'</sup> is a divalent radical selected from substituted and unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl and substituted and unsubstituted C<sub>7</sub>-C<sub>30</sub> aralkyl, wherein said aryl and aralkyl groups when substituted are monosubstituted or multisubstituted and said substituents are independently selected from linear and branched C<sub>1</sub>-C<sub>5</sub> alkyl, linear and branched C<sub>1</sub>-C<sub>5</sub> haloalkyl, linear and branched C<sub>1</sub>-C<sub>5</sub> alkoxy, linear and branched C<sub>1</sub>-C<sub>5</sub> haloalkoxy, linear and branched C<sub>1</sub>-C<sub>12</sub> trialkylsilyl, C<sub>6</sub>-C<sub>18</sub> triarylsilyl, and halogen selected from chlorine, bromine, and fluorine.

53. (Original) The reactant composition of claim 52 wherein said borate is selected from the group consisting of [B(O<sub>2</sub>C<sub>6</sub>F<sub>4</sub>)<sub>2</sub>]<sup>-</sup>, [B(OC(CF<sub>3</sub>)<sub>2</sub>(CH<sub>3</sub>))<sub>4</sub>]<sup>-</sup>, [B(OC(CF<sub>3</sub>)<sub>2</sub>H)<sub>4</sub>]<sup>-</sup>, [B(OC(CF<sub>3</sub>)(CH<sub>3</sub>)H)<sub>4</sub>]<sup>-</sup>, and [B(OCH<sub>2</sub>(CF<sub>3</sub>))<sub>4</sub>]<sup>-</sup>.

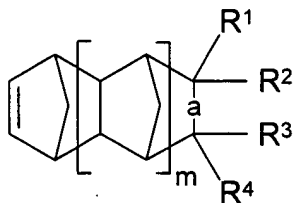
54. (Original) The reactant composition of claim 52 wherein said aluminate is selected from the group consisting of , [Al(OC(CF<sub>3</sub>)<sub>2</sub>Ph)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>2</sub>C<sub>6</sub>H<sub>4</sub>-4-CH<sub>3</sub>)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>3</sub>)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)(CH<sub>3</sub>)H)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>2</sub>H)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>2</sub>C<sub>6</sub>H<sub>4</sub>-4-*i*-Pr)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>2</sub>C<sub>6</sub>H<sub>4</sub>-4-*t*-butyl)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>2</sub>C<sub>6</sub>H<sub>4</sub>-4-SiMe<sub>3</sub>)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>2</sub>C<sub>6</sub>H<sub>4</sub>-4-Si-*i*-



$\text{Pr}_3)_4]^+$ ,  $[\text{Al}(\text{OC}(\text{CF}_3)_2\text{C}_6\text{H}_2-2,6-(\text{CF}_3)_2-4-\text{Si}-i\text{-Pr}_3)_4]^+$ ,  $[\text{Al}(\text{OC}(\text{CF}_3)_2\text{C}_6\text{H}_3-3,5-(\text{CF}_3)_2)_4]^+$ ,  $[\text{Al}(\text{OC}(\text{CF}_3)_2\text{C}_6\text{H}_2-2,4,6-(\text{CF}_3)_3)_4]^+$ , and  $[\text{Al}(\text{OC}(\text{CF}_3)_2\text{C}_6\text{F}_5)_4]^+$ .

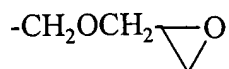
55. (Previously Presented) The reactant composition of claim 79 wherein said activator salt is selected from the group consisting of lithium tetrakis(pentafluorophenyl)borate, sodium tetrakis(pentafluorophenyl)borate, lithium (diethylether) tetrakis(pentafluorophenyl) borate, lithium(diethylether)<sub>2.5</sub> tetrakis(pentafluorophenyl)borate, lithium tris(isopropanol) tetrakis(pentafluorophenyl)borate, lithium tetrakis(methanol) tetrakis(pentafluorophenyl)borate, silver tetrakis(pentafluorophenyl)borate, tris(toluene)silver tetrakis(pentafluorophenyl)borate, trityl tetrakis(pentafluorophenyl)borate, N,N-dimethylanilinium tetrakis(pentafluorophenyl) borate, lithium tetrakis(3,5-bis(trifluoromethyl) phenyl)borate, sodium tetrakis(3,5-bis(trifluoromethyl)phenyl)borate, N,N-dimethylanilinium tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, silver tetrakis[3,5-bis(trifluoromethyl)phenyl]borate, tris(toluene)silver tetrakis[3,5-bis(trifluoromethyl) phenyl]borate, thallium tetrakis[3,5-bis(trifluoromethyl)phenyl]borate,  $\text{LiB}(\text{O}_2\text{C}_6\text{F}_4)_2$ ,  $\text{LiB}(\text{OC}(\text{CH}_3)(\text{CF}_3)_2)_4$ ,  $\text{LiAl}(\text{OC}(\text{CF}_3)_2\text{Ph})_4$ ,  $\text{LiAl}(\text{OC}(\text{CF}_3)_2\text{C}_6\text{H}_4\text{CH}_3)_4$ ,  $\text{LiAl}(\text{OC}(\text{CH}_3)(\text{CF}_3)_2)_4$ ,  $\text{LiAl}(\text{OC}(\text{CF}_3)_3)_4$ ,  $\text{LiAl}(\text{OC}(\text{CF}_3)_2\text{C}_6\text{H}_4-4-i\text{-Pr})_4$ ,  $\text{LiAl}(\text{OC}(\text{CF}_3)_2\text{C}_6\text{H}_3-3,5-(\text{CF}_3)_2)_4$ ,  $\text{LiAl}(\text{OC}(\text{CF}_3)_2\text{C}_6\text{H}_2-2,4,6-(\text{CF}_3)_3)_4$ , and  $\text{LiAl}(\text{OC}(\text{CF}_3)_2\text{C}_6\text{F}_5)_4$ .

56. (Currently Amended) The reactant composition claim 33 80, wherein said polycycloolefin comprises a monomer selected from a compound of the formula:

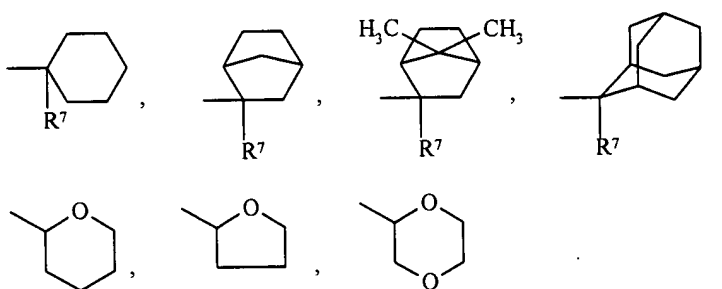


wherein "a" represents a single or double bond; m is an integer from 0 to 5; when "a" is a double bond one of R<sup>1</sup>, R<sup>2</sup> and one of R<sup>3</sup>, R<sup>4</sup> is not present; and R<sup>1</sup> to R<sup>4</sup> independently represent hydrogen, substituted and unsubstituted linear and branched C<sub>1</sub>-C<sub>10</sub> alkyl, linear and branched C<sub>1</sub>-C<sub>10</sub> haloalkyl, substituted and unsubstituted linear

and branched C<sub>2</sub>-C<sub>10</sub> alkenyl, linear and branched C<sub>2</sub>-C<sub>10</sub> haloalkenyl, substituted and unsubstituted linear and branched C<sub>2</sub>-C<sub>10</sub> alkynyl, substituted and unsubstituted C<sub>4</sub>-C<sub>12</sub> cycloalkyl, substituted and unsubstituted C<sub>4</sub>-C<sub>12</sub> halocycloalkyl, substituted and unsubstituted C<sub>4</sub>-C<sub>12</sub> cycloalkenyl, substituted and unsubstituted C<sub>4</sub>-C<sub>12</sub> halocycloalkenyl, substituted and unsubstituted C<sub>6</sub>-C<sub>12</sub> aryl, substituted and unsubstituted C<sub>6</sub>-C<sub>12</sub> haloaryl and substituted and unsubstituted C<sub>7</sub>-C<sub>24</sub> aralkyl, R<sup>1</sup> and R<sup>2</sup> or R<sup>3</sup> and R<sup>4</sup> can be taken together to represent a C<sub>1</sub>-C<sub>10</sub> alkylidenyl group, -(CH<sub>2</sub>)<sub>n</sub>C(O)NH<sub>2</sub>, -(CH<sub>2</sub>)<sub>n</sub>C(O)Cl, (CH<sub>2</sub>)<sub>n</sub>C(O)OR<sup>5</sup>, -(CH<sub>2</sub>)<sub>n</sub>-OR<sup>5</sup>, -(CH<sub>2</sub>)<sub>n</sub>.OC(O)R<sup>5</sup>, -(CH<sub>2</sub>)<sub>n</sub>-C(O)R<sup>5</sup>, -(CH<sub>2</sub>)<sub>n</sub>-OC(O)OR<sup>5</sup>, -(CH<sub>2</sub>)<sub>n</sub>SiR<sup>5</sup>, -(CH<sub>2</sub>)<sub>n</sub>Si(OR<sup>5</sup>)<sub>3</sub>, -(CH<sub>2</sub>)<sub>n</sub>C(O)OR<sup>6</sup>, and the group:



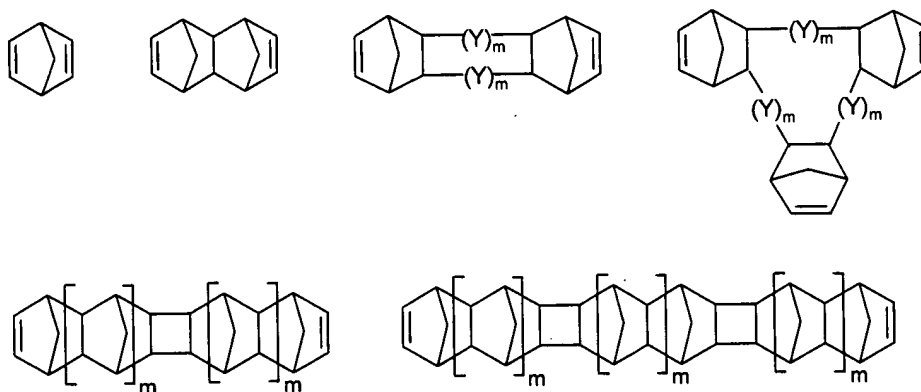
wherein n independently represents an integer from 0 to 10 and R<sup>5</sup> independently represents hydrogen, linear and branched C<sub>1</sub>-C<sub>10</sub> alkyl, linear and branched, C<sub>2</sub>-C<sub>10</sub> alkenyl, linear and branched C<sub>2</sub>-C<sub>10</sub> alkynyl, C<sub>5</sub>-C<sub>12</sub> cycloalkyl, C<sub>6</sub>-C<sub>14</sub> aryl, and C<sub>7</sub>-C<sub>24</sub> aralkyl; R<sup>6</sup> represents a radical selected from -C(CH<sub>3</sub>)<sub>3</sub>, -Si(CH<sub>3</sub>)<sub>3</sub>, -CH(R<sup>7</sup>)OCH<sub>2</sub>CH<sub>3</sub>, -CH(R<sup>7</sup>)OC(CH<sub>3</sub>)<sub>3</sub>, dicyclopropylmethyl, dimethylcyclo-propylmethyl, or the following cyclic groups:



wherein R<sup>7</sup> represents hydrogen or a linear or branched (C<sub>1</sub>-C<sub>5</sub>) alkyl group; R<sup>1</sup> and R<sup>4</sup> together with the two ring carbon atoms to which they are attached can represent a substituted or unsubstituted cycloaliphatic group containing 4 to 30 ring carbon atoms, a

substituted or unsubstituted aryl group containing 6 to 18 ring carbon atoms and combinations thereof;  $R^1$  and  $R^4$  can be taken together to form the divalent bridging group,  $-C(O)-Q-(O)C-$ , which when taken together with the two ring carbon atoms to which they are attached form a pentacyclic ring, wherein Q represents an oxygen atom or the group  $N(R^8)$ , wherein  $R^8$  is selected from hydrogen, halogen, linear and branched  $C_1-C_{10}$  alkyl, and  $C_6-C_{18}$  aryl.

57. (Currently Amended) The reactant composition of claim ~~55~~ 56 wherein said multifunctional polycycloolefin monomer includes a monomer selected from a compound of the formula:



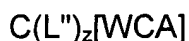
and mixtures thereof, wherein Y represents a  $(-CH_2-)$  group and m independently represents an integer from 0 to 5, and when m is 0, Y represents a single bond.

58. (Currently Amended) The reactant composition of claim ~~or~~ 56 wherein said multifunctional polycycloolefin monomer is present in a range from 0.25 to 99.75 mole % of the total polycycloolefin monomer composition.

59. (Currently Amended) The reactant composition of claim ~~33~~ 80, wherein said composition further comprises a rate moderator selected from the group consisting of water, tetrahydrofuran, 2-methyltetrahydrofuran, diethyl ether, methyl-*tert*-butyl ether, dimethoxyethane, diglyme, trimethylphosphine, triethylphosphine, tributylphosphine,

tri(ortho-tolyl)phosphine, tri-*tert*butyl-phosphine, tricyclopentylphosphine, tricyclohexylphosphine, triisopropylphosphine, trioctyl-phosphine, triphenylphosphine, tri(pentafluorophenyl)phosphine, methyl-diphenylphosphine, dimethylphenylphosphine, trimethylphosphite, triethylphosphite, triisopropylphosphite, ethyl diphenylphosphinite, tributylphosphite, triphenyl-phosphite, diethylphenylphosphonite, and tribenzylphosphine, 2-cyclohexenone, triphenylphosphine oxide, and mixtures thereof.

60. (Withdrawn) A salt composition comprising a compound of the formula:



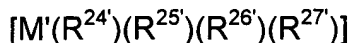
wherein C is lithium or sodium, L'' is an alcohol and z is an integer between 2 and 8 inclusive, and WCA is a weakly coordinating counteranion.

61. (Withdrawn) The salt composition of claim 58 wherein said alcohol is represented by the formula R<sup>9</sup>OH, wherein R<sup>9</sup> represents linear and branched C<sub>1</sub>-C<sub>20</sub> alkyl, linear and branched C<sub>1</sub>-C<sub>20</sub> haloalkyl, substituted and unsubstituted C<sub>3</sub>-C<sub>20</sub> cycloalkyl, substituted and unsubstituted C<sub>6</sub>-C<sub>18</sub> aryl, substituted and unsubstituted C<sub>6</sub>-C<sub>18</sub> aralkyl, and substituted and unsubstituted norbornenyl wherein said substituents in said substituted groups are independently selected from linear and branched C<sub>1</sub>-C<sub>12</sub> alkyl, linear and branched C<sub>1</sub>-C<sub>5</sub> haloalkyl, linear and branched C<sub>1</sub>-C<sub>5</sub> alkoxy, C<sub>6</sub>-C<sub>12</sub> aryl, and halogen selected from chlorine, bromine, and fluorine.

62. (Withdrawn) The salt composition of claim 59 wherein said alcohol is selected from methanol, ethanol, n-propanol, isopropanol, *t*-butanol, and 5-norbornene-2-methanol.

63. (Withdrawn) The salt composition of claim 58 wherein said weakly coordinating counteranion is selected from borate or aluminate.

64. (Withdrawn) The salt composition of claim 61 wherein the weakly coordinating anion is a borate or aluminate of the formula:



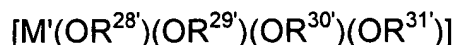
wherein M' is boron or aluminum and R<sup>24'</sup>, R<sup>25'</sup>, R<sup>26'</sup>, and R<sup>27'</sup> independently represent fluorine, linear and branched C<sub>1</sub>-C<sub>10</sub> alkyl, linear and branched C<sub>1</sub>-C<sub>10</sub> alkoxy, linear and branched C<sub>3</sub>-C<sub>5</sub> haloalkenyl, linear and branched C<sub>3</sub>-C<sub>12</sub> trialkylsiloxo, C<sub>18</sub>-C<sub>36</sub> triarylsiloxo, substituted and unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl, and substituted and unsubstituted C<sub>6</sub>-C<sub>30</sub> aryloxy groups, wherein R<sup>24'</sup> to R<sup>27'</sup> can not simultaneously represent alkoxy or simultaneously represent aryloxy, and wherein said aryl and aryloxy groups when substituted are monosubstituted or multisubstituted and said substituents are independently selected from linear and branched C<sub>1</sub>-C<sub>5</sub> alkyl, linear and branched C<sub>1</sub>-C<sub>5</sub> haloalkyl, linear and branched C<sub>1</sub>-C<sub>5</sub> alkoxy, linear and branched C<sub>1</sub>-C<sub>5</sub> haloalkoxy, linear and branched C<sub>1</sub>-C<sub>12</sub> trialkylsilyl, C<sub>6</sub>-C<sub>18</sub> triarylsilyl, and halogen selected from chlorine, bromine, and fluorine.

65. (Withdrawn) The salt composition of claim 62 wherein said borate is selected from the group consisting of tetrakis(pentafluorophenyl)borate, tetrakis(3,5-bis(trifluoromethyl)phenyl)borate, tetrakis(2-fluorophenyl)borate, tetrakis(3-fluorophenyl)borate, tetrakis(4-fluorophenyl)borate, tetrakis(3,5-difluorophenyl) borate, tetrakis(2,3,4,5-tetrafluorophenyl)borate, tetrakis(3,4,5,6-tetra fluoro-phenyl)borate, tetrakis(3,4,5-trifluorophenyl)borate, methyltris(perfluoro-phenyl)borate, ethyltris(perfluorophenyl)borate, phenyltris(perfluorophenyl)borate, tetrakis(1,2,2-trifluoro ethylenyl)borate, tetrakis(4-tri-*i*-propylsilyltetrafluorophenyl) borate, tetrakis(4-dimethyl-*tert*-butylsilyltetrafluorophenyl)borate, (triphenylsiloxo)tris (pentafluorophenyl)borate, (octyloxy)tris(pentafluorophenyl)borate, tetrakis[3,5-bis [1-methoxy-2,2,2-trifluoro-1-(trifluoromethyl)ethyl]phenyl]borate, tetrakis[3-[1-methoxy-2,2,2-trifluoro-1-(trifluoromethyl)ethyl]-5-(trifluoromethyl)phenyl]borate, and tetrakis[3-[2,2,2-trifluoro-1-(2,2,2-trifluoroethoxy)-1-(trifluoromethyl)ethyl]-5-(trifluoromethyl)phenyl]borate.

66. (Withdrawn) The salt composition of claim 62 wherein said aluminate is selected from the group consisting of tetrakis(pentafluorophenyl)aluminate,

tris(nonafluorobiphenyl)fluoroaluminate, (octyloxy)tris(pentafluorophenyl)aluminate, tetrakis(3,5-bis(trifluoromethyl)phenyl)aluminate, and methyltris(pentafluorophenyl)aluminate.

67. (Withdrawn) The salt composition of claim 61 wherein the weakly coordinating anion is a borate or aluminate of the formula:



M' is boron or aluminum, R<sup>28'</sup>, R<sup>29'</sup>, R<sup>30'</sup>, and R<sup>31'</sup> independently represent linear and branched C<sub>1</sub>-C<sub>10</sub> alkyl, linear and branched C<sub>1</sub>-C<sub>10</sub> haloalkyl, C<sub>2</sub>-C<sub>10</sub> haloalkenyl, substituted and unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl, and substituted and unsubstituted C<sub>7</sub>-C<sub>30</sub> aralkyl groups, subject to the proviso that at least three of R<sup>28'</sup> to R<sup>31'</sup> must contain a halogen containing substituent; OR<sup>28'</sup> and OR<sup>29'</sup> can be taken together to form a chelating substituent represented by -O-R<sup>32'</sup>-O-, wherein the oxygen atoms are bonded to M' and R<sup>32'</sup> is a divalent radical selected from substituted and unsubstituted C<sub>6</sub>-C<sub>30</sub> aryl and substituted and unsubstituted C<sub>7</sub>-C<sub>30</sub> aralkyl, wherein said aryl and aralkyl groups when substituted are monosubstituted or multisubstituted and said substituents are independently selected from linear and branched C<sub>1</sub>-C<sub>5</sub> alkyl, linear and branched C<sub>1</sub>-C<sub>5</sub> haloalkyl, linear and branched C<sub>1</sub>-C<sub>5</sub> alkoxy, linear and branched C<sub>1</sub>-C<sub>5</sub> haloalkoxy, linear and branched C<sub>1</sub>-C<sub>12</sub> trialkylsilyl, C<sub>6</sub>-C<sub>18</sub> triarylsilyl, and halogen selected from chlorine, bromine, and fluorine.

68. (Withdrawn) The salt composition of claim 65 wherein said borate is selected from the group consisting of [B(O<sub>2</sub>C<sub>6</sub>F<sub>4</sub>)<sub>2</sub>]<sup>-</sup>, [B(OC(CF<sub>3</sub>)<sub>2</sub>(CH<sub>3</sub>))<sub>4</sub>]<sup>-</sup>, [B(OC(CF<sub>3</sub>)<sub>2</sub>H)<sub>4</sub>]<sup>-</sup>, [B(OC(CF<sub>3</sub>)(CH<sub>3</sub>)H)<sub>4</sub>]<sup>-</sup>, and [B(OCH<sub>2</sub>(CF<sub>3</sub>))<sub>4</sub>]<sup>-</sup>.

69. (Withdrawn) The salt composition of claim 65 wherein said aluminate is selected from the group consisting of , [Al(OC(CF<sub>3</sub>)<sub>2</sub>Ph)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>2</sub>C<sub>6</sub>H<sub>4</sub>-4-CH<sub>3</sub>)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>3</sub>)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)(CH<sub>3</sub>)H)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>2</sub>H)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>2</sub>C<sub>6</sub>H<sub>4</sub>-4-*i*-Pr)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>2</sub>C<sub>6</sub>H<sub>4</sub>-4-*t*-butyl)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>2</sub>C<sub>6</sub>H<sub>4</sub>-4-SiMe<sub>3</sub>)<sub>4</sub>]<sup>-</sup>, [Al(OC(CF<sub>3</sub>)<sub>2</sub>C<sub>6</sub>H<sub>4</sub>-4-Si-*i*-

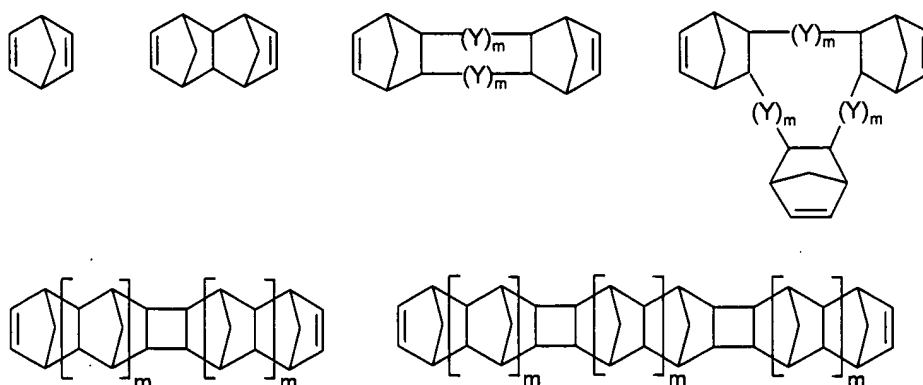
$\text{Pr}_3)_4]^+$ ,  $[\text{Al}(\text{OC}(\text{CF}_3)_2\text{C}_6\text{H}_2-2,6-(\text{CF}_3)_2-4-\text{Si}-i\text{-Pr}_3)_4]^+$ ,  $[\text{Al}(\text{OC}(\text{CF}_3)_2\text{C}_6\text{H}_3-3,5-(\text{CF}_3)_2)_4]^+$ ,  $[\text{Al}(\text{OC}(\text{CF}_3)_2\text{C}_6\text{H}_2-2,4,6-(\text{CF}_3)_3)_4]^+$ , and  $[\text{Al}(\text{OC}(\text{CF}_3)_2\text{C}_6\text{F}_5)_4]^+$ .

70. (Withdrawn) The salt composition of claim 58 selected from the group consisting of lithium tris(isopropanol) tetrakis(pentafluorophenyl)borate, and lithium tetrakis(methanol) tetrakis(pentafluorophenyl)borate.

71. (Withdrawn) A crosslinked addition polymer polymerized from a monomer mixture comprising a polycycloolefin containing one polymerizable norbornene-type moiety and a multifunctional polycycloolefin containing at least two polymerizable norbornene-type moieties.

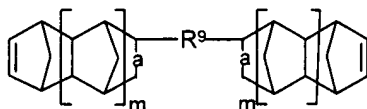
72. (Withdrawn) The crosslinked addition polymer of claim 69 wherein said monomer mixture comprises from 0.25 to 99.75 mole % of a multifunctional polycycloolefin monomer.

73. (Withdrawn) The crosslinked addition polymer of claim 69 wherein multifunctional polycycloolefin monomer includes a monomer selected from a compound of the formula:



and mixtures thereof, wherein Y represents a (-CH<sub>2</sub>-) group and m independently represents an integer from 0 to 5, and when m is 0, Y represents a single bond.

74. (Withdrawn) The multifunctional polycycloolefin monomer set forth in claims 29, 55, and 69 wherein said monomer is selected from a composition of the formula:



wherein "a" independently represents a single or double bond, m independently is an integer from 0 to 5, R<sup>9</sup> is a divalent radical selected from divalent hydrocarbyl radicals and divalent ether radicals.

75. (Withdrawn) The multifunctional polycycloolefin monomer of claim 72 wherein said hydrocarbyl radical is selected from C<sub>1</sub>-C<sub>10</sub> alkylene radicals and divalent aromatic radicals.

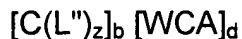
76. (Withdrawn) The multifunctional polycycloolefin monomer of claim 72 wherein said divalent ether radical is selected from a radical of the formula -R<sup>10</sup>-O-R<sup>10</sup>-, wherein R<sup>10</sup> represents a hydrocarbyl radical.

77. (Withdrawn) The multifunctional polycycloolefin monomer of claim 74 wherein R<sup>10</sup> independently is selected from the group consisting of C<sub>1</sub>-C<sub>10</sub> alkylene, divalent aromatic radicals, and combinations thereof.

78. (Canceled)



79. (Currently Amended) A storage stable reactant composition for in-mold polymerization consisting essentially of an activator salt and a monomer wherein said activator salt is represented by the formula:



wherein C represents a proton, an alkali metal cation, an alkaline earth metal cation, a transition metal cation or an organic group containing cation, L'' is a labile neutral electron donor ligand, and WCA is a weakly coordinating counteranion, z is an integer from 0 to 8, and b and d represent the number of times the cation complex and weakly coordinating counteranion complex, respectively, are taken to balance the electronic charge on the overall salt complex,

and the monomer comprises a multifunctional polycycloolefin containing at least two polymerizable norbornene-type moieties.

80. (New) A storage stable reactant formulation for in-mold polymerization consisting essentially of a procatalyst and a monomer wherein said procatalyst is a compound of the formula:



wherein M represents a Group 10 transition metal; R' represents hydrogen or an anionic ligand selected from the groups consisting of linear and branched C<sub>1</sub>-C<sub>20</sub> alkyl, C<sub>5</sub>-C<sub>10</sub> cycloalkyl, linear and branched C<sub>2</sub>-C<sub>20</sub> alkenyl, C<sub>6</sub>-C<sub>15</sub> cycloalkenyl, allylic ligands or canonical forms thereof, C<sub>6</sub>-C<sub>30</sub> aryl, C<sub>6</sub>-C<sub>30</sub> heteroatom containing aryl, and C<sub>7</sub>-C<sub>30</sub> aralkyl, each of the foregoing groups can be optionally substituted with hydrocarbyl and/or heteroatom substituents preferably selected from linear or branched C<sub>1</sub>-C<sub>5</sub> alkyl, linear or branched C<sub>1</sub>-C<sub>5</sub> haloalkyl, linear or branched C<sub>2</sub>-C<sub>5</sub> alkenyl and haloalkenyl, halogen, sulfur, oxygen, nitrogen, phosphorus, and phenyl optionally substituted with linear or branched C<sub>1</sub>-C<sub>5</sub> alkyl, linear or branched C<sub>1</sub>-C<sub>5</sub> haloalkyl, and halogen;

L' represents a Group 15 neutral electron donor ligand; A' is an anionic leaving group; x is 1 or 2;

and the monomer comprises a multi-functional polycycloolefin containing at least two polymerizable norbornene-type moieties.